Marshall Magruder
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November 30, 2003

Mrs. Ellen Russell
Office of Fossil Energy (FE-27)
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0350

Subject: **Inputs to the Environmental Impact Statement Scoping Process for Baja California Power and Sempra Energy Resources (FE Docket Nos. PP-245 and PP-245)**

References:
(a) Federal Register, Volume 68, October 30, 2003, 61796 to 61799
(b) Environmental Assessment – Presidential Permit Applications for Baja California Power, Inc., and Sempra Energy Resources, DOE/EA-139, December 2001
(c) Federal Register, Volume 66, July 10, 2001, 35950 to 35953

Enclosure:
(1) Comments to Arizona Corporation Commission on Natural Gasline Safety, Nov. 18, 2003

Dear Mrs. Russell:

1. <u>Background.</u> I recently learned of the scoping status for an Environmental Impact Statement (EIS) for these two projects. This is an input to the scoping process.

These projects involve two power plants in Mexico, one by Baja California (BCP) and the other by Sempra Energy Resource (SER). Another related project is the Sahuarita-Nogales TEP Transmission Line (PP-229). There are many similar and dissimilar issues. Table 1 is a summary of each project.

Table 1 – Capabilities of the Baja California and TEP Projects.

Capabilities	BCP Project	SER Project	TEP Project
Transmission lines	230 kV, double circuit (12)	230 kV, double circuit (12)	345 kV, double circuit (12)[1]
Transmission line capacity	2 x 600 MW/circuit = **1200** MW	2 x 1200 MW/circuit = **2400** MW (2x1400 MW peak = 2800 MW)	2 x 1000 MW/circuit = **2000** MW
Energy source location, distance	Mexicali, Mexico (100% flow from Mexico?), 3 miles south	Mexicali, Mexico (100% flow from Mexico), 3 miles south	TEP testified 30% flow from Mexico, 70% flow from US
Energy source power	1 x 250 MW for US; 1 x 310 MW for US; [2 x 250 MW = 500 MW for CFE Mexico] Total generated = 1060 MW	600 MW (natural gas fuel)	None specified, 500 MW nominal at startup (fuel TBD)
Length of line north of border	6 miles on BLM lands	6 miles on BLM lands	60 miles north of border, 30 miles USFS, 2 miles BLM, rest private property
Terminal	SDG&E Substation	SDG&E Substation	TEP South Substation

[1] There are no 345 kV transmission systems in northern Sonora, so this voltage has never been verified as being compatible with the Mexican CFE system, as 230 kV transmission lines are present.

Each project has very high voltage transmission lines. The generation sources and characteristics are known for both the Mexicali projects. TEP has shown no interest in determine the generation sources as TEP testified it is just providing a "toll way" to let others use for such business purposes. TEP testified the "wheeling" charge (at $2.33/kW-month), will provide revenue, about $4,660,000 per month in such tolls when at full capacity and also is to provide a backup, secondary power source for Nogales, Arizona. TEP has no contracts with any entity to import/export electricity. No contracts are required for the Mexicali plants and transmission lines.

2. Scoping Issues Recommended. All three projects have significant environmental impact concerns. The major issues in the DOE Environmental Assessment (EA), reference (b), appear as common between these projects.

Issue One – Connected Actions. The entire US-Mexican border, from the Pacific to Gulf of Mexico, has similar energy issues. Unfortunately, the proliferation of governmental US and Mexican agencies and organizations only work one of these issues, at one project at a time.

Each project is assessed independent of the others. The US Council on Environmental Quality has a "Cumulative Effects Analysis" process that needs to review the impacts on both sides of the political interface. Each impacts the other. Each has dozens of agencies, organizations, and bureaucracies, on each side of the border that does not make agreements with their bi-national counterparts. A coherent and progressive strategic plan has never been attempted. The Arizona-Mexican Commission (AMC) is primarily an Arizona-Sonora interface and is independent from actions in Baja California and California. The actions by the Federal Energy Regulatory Agency (FERC), DOE, and other departments are rarely coordinated except through the NEPA process as was obvious in this case.

This means critical infrastructure routing policies and actions in one area are not transferable to another. Even more detrimental to long term sustainability are the diverse environmental rules, regulations and enforcement criteria. Environmental and political boundaries are rarely synonymous, except maybe along coastlines and rivers.

Natural gas for generators is as related to transmission lines as water is to agriculture. All four of these are closely interrelated. Without an clear understanding of these local, regional, state, national and international relationships that these two power plants and associated transmission lines will have, then the environmental analyses remains incomplete.

For Ambos Nogales,[2] we have similar concerns and require the same kind of analyses, as specified in reference (c) but not completed in the TEP draft EIS. Actions on one side of the border have consequences on the other. Using actual data from the Mexicali power plants could be a good scenario or option to meet the unspecified (by TEP) power plant issues in the Ambos Nogales area and then apply those results, scaled appropriately. This needs to be assessed for air, water, energy and overall community sustainability.

Actions by both governments must be coordinated. The same cooperation exhibited in the US Scoping processes should be done with both countries at the same table, with agreements made by both simultaneously. Without the same fidelity of local analyses, integrated at the border and on the border, can real actions be coordinated.

There are promises, desires and wishes in the EA, not Memoranda of Agreements or any legal binding agreements between organizations. In the EA Section 5.0, on page 128 little thought was given to the

[2] Ambos Nogales means all of Nogales, both Sonoran and Arizonan.

different action by various US agencies and their interrelated cumulative environmental impacts. Without legally binding international agreements, then the real border issues cannot be formalized and maintained or sustained, and, thus, there are no management processes in place to protect humans and the environmental impacts each has on the other.

All three projects are long-term, at least fifty-years in length from plant opening, operating and dismantling at the end of its useful life. The above are clear criteria for a detailed, comprehensive Effects Analysis (CEA) for the life cycle of these projects to be included within this EIS.

Recommend. That a comprehensive 50-year Cumulative Effects Analysis (CEA) be developed, assessed and evaluated, then presented to all the various agencies and organizations for these both Mexicali generation and transmission facilities, in one document. This CEA has to account for all US and Mexican growth projections, environmental trends, major equipment maintenance and operational actions, and human actions that impact the various issues in this scoping input letter. This CEA must review the historical trends, the present human and environmental factors, and future growth impacts on both sides of the border, the overall energy and sustainment requirements, by using all the related bi-national governmental and non-governmental organizations (NGOs) related to the long-term planning for Mexicali and Imperial Valley areas. This should not be a Washington-based project.

Issue Two – Air Quality Issues.

Each project is located adjacent to an EPA non-attainment area, in particular PM_{10} and ozone (Mexicali only). The long-term impacts of the generation sources located within 300 miles of the Mexican border are concerns in both California and Arizona as the prevailing winds are from the South. Texans complain of acid rain from Mexican generation plants 300 miles from the border.

Actions that improve air quality are necessary for any large projects in Mexicali and/or Ambos Nogales. What features in each of these projects actually **improve** air quality?

Serious breaches of environmental quality and enforcement regulations and statutes in Mexico are well known. Thus, requirements for the American companies must be through the US Department of Energy to ensure and protect the health, welfare and safety of American and Mexican citizens. Anything less should not be tolerated. Health is bi-national. The actions by US companies (no mater who is “acting”) that impact Mexican local population health is as important as Mexican actions that impact the US local populations in the areas of these projects. The EA section on Air Quality was deficient in details.

Related to air and water quality are bi-national environmental justice issues.

Recommend. That a detailed, long-term air quality study included within the EIS that uses climatological and forecast data to assess the impacts on air quality, rainfall, dust, and seasonal variations that impact the regional agricultural enterprises. Obviously, the cumulative air quality analysis must consider impacts on humans from the long-term pollutants that are directly caused by these power plants but also the indirect causes, including expanded populations and energy changes. The long-term trends for significance levels must be modeled and resultant **monitoring** and pollution control equipment required for each power plant. There should be criteria established that will result in additional actions when the predicted long-term forecast data deviates from the predicted trend, with consequences including plant modification or shutdown, if the criteria are exceeded. This document has to be agreed to by the companies, the various governments including state and various NGOs involved both in Mexicali and Ambos Nogales. Air quality criteria have to be agreed and presented as signed Memoranda of Agreement, or similar legal documentation, as a part of the EIS.

Issue Three – Water Use/Quality.
Water is critical for human survival, wildlife, agricultural products and sustaining our way of life. The recent changes in the Colorado River allotments and the ongoing long-term drought have raised additional awareness of this highest environmental concern. All regional flows, under 100-year (or maybe 500-year) conditions, needs to be assessed based on cumulative population growth, energy needs, and retaining and sustaining biological wealth in this region.

As the water flows to the Salton Sea, the Santa Cruz River flows in and out of Ambos Nogales to the north. Each of these are undergoing direct impacts by human growth and each requires special measures to ensure water flows, remains sustainable, and meets all the quality standards. The water budgets, including wastewater, surface and ground water, must be calculated and each element assessed extended impacts by these projects.

In Arizona, we have the Santa Cruz Water Active Management Area (SCAMA) that looks at ground water as a part of the Arizona Department of Water Resources with a similar organization in California. Impacts on the "assured 100-year supply" of drinkable water are required in Arizona and needs to be assessed for all projects. As indicated with air quality, water quality monitoring needs to be considered at each plant. Criteria limits have to be set and agreed so that operational or equipment changes, including plant shutdown options are published and known, if water flow, quantify or quality criteria are exceeded. This has to be agreed to by the companies, governments and NGOs involved both in Mexicali-El Centro and Ambos Nogales. Further, liability for damage issues needs to be resolved in this document.

Recommend. That long-term water flow, quantity and quality issues be assessed, using regional data, to assure that there are no negative impacts on these three attributes. Water criteria have to be agreed and presented as signed Memoranda of Agreement, or similar legal documentation, as an integrated part of the EIS. A copy of the "signed" document should be required before a Presidential permit can be issued.

Issue Four – Mitigation.
The EA stated that "DOE and BLM believe that the owners. have taken substantial measures to mitigate the impacts from their facilities by voluntarily agreeing to …" is very weak. Only by a written agreement from these companies, and applicable to their successors, on both sides of the border, can any assurance be made of compliance. Without on-site, independent follow-up and feedback mechanisms included in "mitigation measures" and plans, can one know if the mitigation actions and measure met their goals?

Recommend. – That a group of independent observers, representing bi-national governmental and NGO organizations, agencies and groups, be established to monitor compliance with all mitigation measures. That the "mitigation measures" be specified to the degree that specific monitoring criteria are established to ensure completion of each measure, which included air and water issues, but needs to also include construction road removal, cleanup after construction, use of native low-water plant seeds when reconstructing damaged habitats, and other environmental factors associated with successful projects.

Issue Five – Need for an Environmental Impact Statement.
This has been resolved and should be enhanced with a comprehensive, bi-national Cumulative Effects Analysis.

Recommend. – That a comprehensive, bi-national Cumulative Effects Analysis (CEA) be conducted for this project.

Issue Six – Other Permitting Requirements.
The EA seems to pass notification that compliance with all permits to both applicants is the end of permitting. Each permit has a different paper trail, series of steps to show compliance and final approval process. This would be

Recommend. That the group of independent observers, representing bi-national governmental and NGO organizations, agencies and groups, be established to monitor compliance with the permit compliance process. Obviously, this should be the same as the Mitigation groups discussed under Issue Four. The difference when permitting is involved, is that this group would understand factors leading to permit issuance. When a permit has been violated, then this group would have the responsibility to report it to the appropriate organizations. The functional flow for such groups should be included in the EIS.

Issue Seven – Emergency Response Measures.
The EIS needs to assess the risk probabilities associated with various natural and human-caused damages that might occur to the power plants and associated transmission lines using risk management processes (e.g., develop risk indices for each kind of event). For each event, then a response plan needs to be assess, in terms of options, so that the companies risk mitigation plan and measures assures continuity of service.

Recommend. Since the emergency responses are expected for after delivery, then a group of independent observers, representing bi-national governmental and NGO organizations, agencies and groups, be established to monitor compliance with all emergency response measures. This needs to be established, agreed to by the various companies and agencies, as an integrated part of the EIS.

3. Two Additional Scoping Issues Recommended.

Issue Eight – System Capabilities.
All three permits are for double circuits systems, with TEP to construct the second circuit before power is available. It appears the Mexicali will add the second circuit later. The permit is permission to construct a "capability" and needs to consider the "total" system, not an element now and then another element later.

Recommend. That the entire system be assessed in the EIS, not just one element, and then have to repeat the EIS process for another circuit at a later date. In fact, the permission is for a capability, as it may never be exercised.

Issue Nine - Natural Gas and Transmission Line Impacts.
As the TEP Project will have sections parallel to two high-pressure natural gaslines, this project will have similar interactions. The enclosure (1) illustrates two natural gas problems: (a) substation venting and (b) electrical interactions with a gasline. The first issue is related to natural gas substations and an issue for the Mexicali project and is of significant concern in two areas of the TEP project in Tubac and McGee Ranch. The Baja Norte Pipeline and the two 230 kV transmission lines appear parallel, thus the same issues are present in these project. This issue is a national issue that needs resolution as soon as possible, preferably before the draft EIS for these two projects and the final EIS for the TEP's transmission line.

Recommend. As discussed and shown in the enclosure (1), resolution of the standard for determining the minimum safe distance between natural gaslines and high voltage transmission lines needs to be resolved, understood, promulgated, and implemented as soon as possible.

4. Additional Comments. A review of the NOI to conduct an EIS, reference (c), had list of eight potential environmental issues that DOE tentatively identified as potential areas for analysis including some relevant modifications for this EIS:

(1) Socioeconomic impacts of development of the bi-national land tracts and their subsequent uses
(2) Impacts on protected, threatened, endangered, or sensitive species of animals or plants, or their critical habitats in Mexico and the U.S.;
(3) Impacts on floodplains and wetlands including the Salton Sea;
(4) Impacts on cultural or historic resources on both sides of the border;
(5) Impacts on human health and safety in the bi-national region;
(6) Impacts on air quality, soil, and water quantify and quality;
(7) Visual impacts; and
(8) Disproportionately high and adverse impacts on minority and low income populations.

This is list of the essential contents, as modified, is recommended for this EIS.

Sincerely,

Marshall Magruder

Cc. Dr. Jerry Pell, DOE

Enclosure (1)

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18 November 2003

BEFORE THE ARIZONA CORPORATION COMMISSION

For "Call to the Public," prior to the Agenda of the Open Meeting held this date in Tubac Arizona

Subject: **Comments on Pipeline Safety**

Reference:
(a) Commissioner Kristin Mayes letter of 24 October 2003, Subject: Pipeline Safety

In response to several ongoing investigations concerning pipelines, including Commissioner Mayes request, reference (a), we have two local natural gas issues in Tubac that should be considered in these investigations.

The first involves natural gas venting from a local El Paso Natural Gas substation and the second involves interactions between a natural gas pipeline and high voltage electric transmission lines.

FIRST ISSUE - NATURAL GAS VENTING

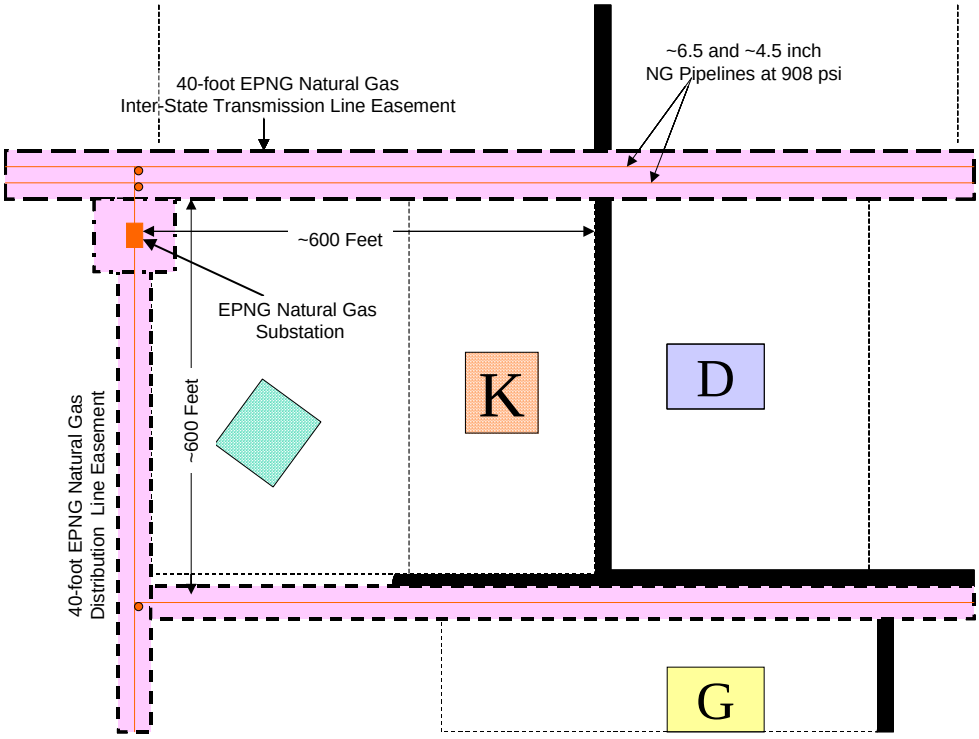

Figure 1 – Geometry showing EPNG line and its Substation, several homes, and distribution lines. (Not to scale)

On resident (label K), shown in Figure 1 above, has complained before the ACC Transmission Line Siting Case 111 and the Department of Energy Siting Hearings, about this substation. There are four pressure relief values at this substation. These have opened and released natural gas for

periods continuously up to 36 hours. She can smell the NG in her home. She has called and written the local gas company, which was Citizens Gas, at that time, several times with no results. She complained with Citizens' personnel present during Case 111, with no results. She has written El Paso Natural Gas, with no results. She has written Senator McCain's office, twice, with no results. Unfortunately, she moved away about a month. Does she consider her former home is not safe? Her home has been "for sale" for about a year, without a buyer.

About six months ago, the Tubac fire department was called and the fire chief complained to the ACC. The relief values have stopped venting but she's not sure if it will ever happen again.

It is rather obvious, that long-term natural gas "bleed-offs" can lead to explosive mixtures of air and natural gas. This occurs between 5% and 15% natural gas to air mixtures. That is not very concentrated and with a low atmospheric thermal inversion, such conditions could easily permit this to happen with possible serious consequences to humans and property.

The person involved is out of town so she could not be here today. Most here have hear this story several times, because she's tried for over two years before the fire chief was finally called. She now has an empty home, an obvious financial drain, but at least she's safe.

There is a second substation along this same EPNG pipeline that has the similar problems. It is located at the McGee ranch area, about 30 miles to the north of here, where there are three (and four if the proposed TEP is constructed) transmission lines alongside this same EPNG pipeline.

I could obtain statements from both, if you wish.

Last weekend, I walked along the EPNG pipeline to the above substation. I could easily hear the natural gas flowing in the lines.

SECOND ISSUE – NATURAL GASLINE AND TRANSMISSION LINE SAFE SEPARATION

Older natural gaslines are made of ferromagnetic material, which can conduct electricity and corrode by oxidizing (rust). Certified corrosion control engineers must monitor these lines, usually in conjunction with the ACC Office of Pipeline Safety (OPS) activities. Various methods are employed to determine the amount of corrosion with older lines having reduced operational pressures initially imposed or shutdown, when unsafe. Cathodic protection systems are installed to reduce corrosion by either active or passive means. Our local NG pipelines (see Figure 1) have a 0.4 Voltage (direct current) internal copper wire to neutralize the natural electrolytic processes between the soil and the pipeline. In passive measure, zinc or a similar metal is used that corrodes easier and faster than the pipe. Active measures are more common.

The ACC OPS can use a "pig" to travel through the pipeline and take measurements of pipe wall thickness and to determine if corrosion has weaken the line so repairs can be made. There are less inspection options available for smaller pipelines. Ours are too small for a "pig."

Conduction of electricity from a transmission line into a natural gasline can occur from several means. Both the radiated voltage and radiated electromagnetic fields (EMF) from a transmission line can travel through the air, through the soil and cause the gas line to conduct electricity, similar to a wire. The voltage field around a transmission line can add a direct current charge to the gasline while the EMF can induce an alternating current into the gas line.

The greater the voltage or power in the transmission line, the higher amount is conducted. The transmission through the soil is a function of multiple variables, which include line's voltage and wattage, humidity, soil conductivity or resistance to electrical current, the depth of the pipe, and

the pipeline material. These obviously will be different for various transmission system, locations and atmospheric conditions. Each situation will be different, so correct calculations must be performed in each situation, in fact, may change with different soil types along the rights of way.

In addition to transmission line impacts, lightning can be grounded near a transmission line tower to add very high voltages/wattage into the soil and possibly into the gasline.

The electricity from the transmission lines can induce current to flow into and along natural gas lines. Some of the known effects of such electrical charges could include:

a. Stoves, clothes dryers, or other appliances that are connected to natural gas lines become charged with high voltage electricity. Either sparks or human shock could be an unfortunate consequence. This is why homes are "grounded." This should be checked during a building inspection but can become damaged or corroded during the lifetime of the structure

b. A spark from charged "earth" could cause a NG-air mixture to explode or torch.

c. The pipeline cathodic protection system receives interference from the transmission line, thus the pipeline corrosive characteristics and predictions are unknown that proper OPS inspection intervals being changed accordingly.

Another phenomenon is **induced charges for ferromagnetic objects that move through the fields** under a transmission line. A typical example is a truck or automobile. The vehicle pickups up this charge but the rubber tires prevent the moving vehicle to be grounded thus there is no problem unless the road is wet, even worse, with wet snow that has been salted. In another case, large fuel trucks, such as gasoline trucks have a small chain which is continually dragged to continuously "ground" the truck so that static electricity does not cause a spark to cause an incident with any gasoline vapors or liquid gasoline. When going under a transmission line, this chain removed the "safety" afforded the wheels of other vehicles.

All of these were discussed with the ACC OPS during the ACC Line Siting Hearings, Case 111, with Mr. Terry Fronterhouse, Director ACC OPS. One primary concern was the "minimum safe" distance between the NG pipeline and the transmission line. The ACC staff, in its filing on 15 May 2001, Attachment B, provided a copy of a draft report on "*A Model for Sizing High Consequence Areas Associated with Natural Gas Pipelines"* prepared for the Gas Research Institute (GRI). That report was provided as technical input to the U.S. Department of Transportation's Office of Pipeline Safety decision process as it develops a new pipeline safety rule for Pipeline Integrity Management in High Consequence Areas. Unfortunately, we are now discussing "siting" decisions. Integrity management is mostly a post-construction inspection verification activity.

There is no "national standard" that set enforceable "minimum safe distance" requirements between transmission lines and natural gas lines. This requires urgent remedy.

This draft GRI document has a formula to calculate the distance to prevent damage to a transmission line from a natural gas fire, one of many different consequences of an incident. Other consequences, including loss of life were considered more significant. Using this formula and the below geometry, this Case No. 111 (ACC Decision 64356) included the following Condition 14:

> **"All transmission structures shall be placed a <u>minimum</u> of 100 feet from the edge of existing pipeline right of way."**

Using the formula from the draft GRI document, for a 6.5-inch natural gas line, the **minimum safe distance is calculated <u>at</u> <u>136</u> <u>feet</u>** between the conductor and the natural gas pipe for a 345 kV transmission line. As shown in Figure 2, it is possible that just **99.0 feet separate the EPNG line and the proposed transmission line**.

Further, there are two pipes, and the **impact on the smaller; second, 4.5-inch natural gasline is never considered**. The GRI draft Report 105 covers only single, not multiple gaslines. **What is essential is the minimum "SAFE" distance. The ACC Condition required a minimum, which is less than the minimum SAFE distance.** The "**safe**" condition must be specified.

During Case 111, Tucson Electric testified that they had not discussed with El Paso Natural Gas, concerning the interference between their proposed transmission line and EPNG's high-pressure gasline. When asked which company would be **liable** for damages to each other and third parties if an unfortunate incident occurred between these two systems, TEP's Program Manager said, "**they will find out in court."** As recently as August 2003, according the *TEP Draft Environmental Impact Statement*, no agreements nor has a Memorandum of Understanding has been reached between these companies. **The liability issue must be solved before, not after an incident.**

A "liability" MOU between the two companies should be a required part of any "permit" for closely located or crossing high voltage electric and gas pipelines.

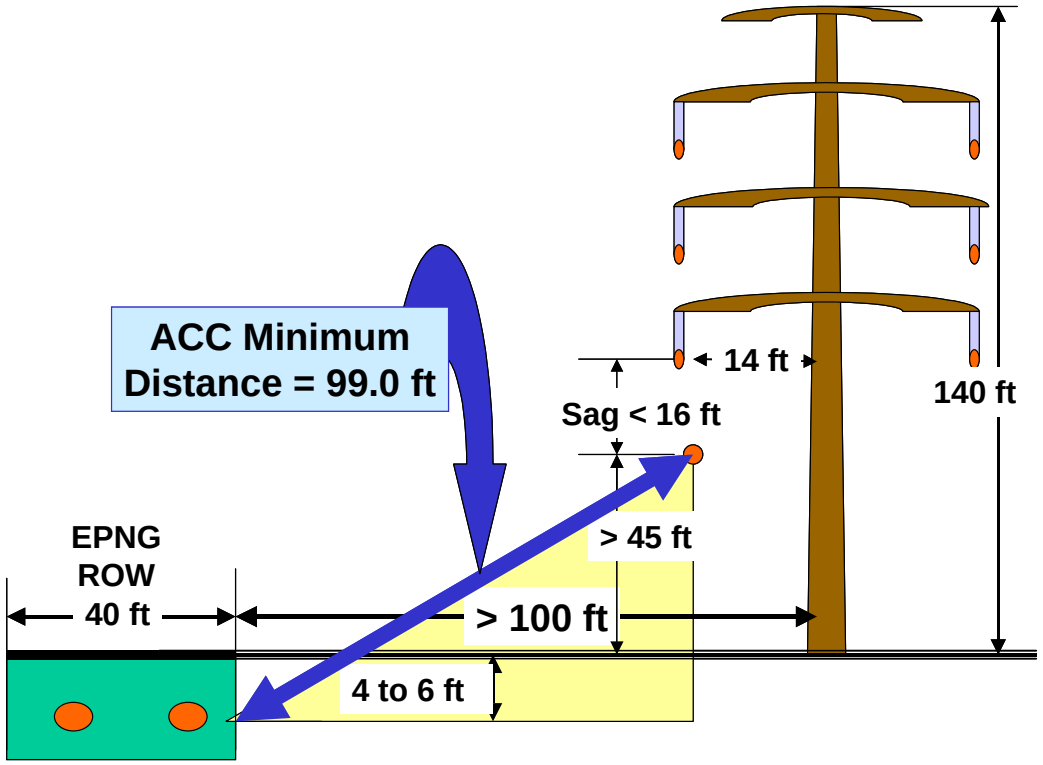

Figure 2 – The Minimum distance between EPNG line and the Conductors in Case 111 fails to meet the requirements of Gas Technical Institute Report 105 (draft) of a minimum of 136-foot separation. (not to scale)

No soil analysis for soil resistance to electricity flow was considered by TEP and none has been completed for this gasline. The age of this nearly 50-year old gasline has not been considered for a major change in its "electric" environment. The impact of electricity on the gasline corrosion measurements (not available) was not considered. The Arizona OPS had no inspection data available during the Line Siting Hearings to describe the current and forecast conditions of this gasline. El Paso Natural Gas was not a party to this proposal for an adjacent transmission line

that has the capacity to carry 2,000 MW at 345,000 volts, enough for Tucson on the hottest of days. This issue has not been resolved. Please see additional comments on the TEP Draft EIS that **request resolution prior to the Final EIS**.

Gasline corrosion changes were not considered, even when the pipeline was nearly 50-years old.

In addition, the grounding of lightning from the towers was not considered, the "venting" at substations has not been considered.

It was recommended that an "academic" team from Arizona universities with some (but not dominant) electricity and natural gas utilities form a working group to propose a "national" standard to determine MINIMUM SAFE DISTANCE. This, of course, will not be one set distance but will have to be computed on a case-by-case basis. This has to be done before any serious consequences occur as both gaslines and transmission systems age with long-term interactive effects unknown.

A "national" standard is urgently required to safely separate the effects of high voltage transmission lines and natural gas (and probably liquid petroleum products) when using parallel and crossing easements.

Summary of Recommendations

1. That an academic, multi-discipline working group draft a National Standard for Determination of the **Minimum SAFE Distance** between Liquid and Natural Gas Pipelines and High Voltage (over 56 kV) Transmission Lines"

2. That all cases where High Voltage and pipelines are within 100 feet of the **Minimum SAFE Distance**, including crossing situations, then a Memorandum of Understanding (MOU) between the two companies involves shall be required to be included with all land use permits. This shall discuss liability and responsibilities, including bond requirements, if necessary, to ensure safety to humans and property.

3. That pipeline information, including corrosion inspection data, line drawings, and inspection results is an integrated part for all transmission line siting hearings in 2 above.

Summary. I pray that no incidents that occur between the first and second issues in this paper.

Sincerely,

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